



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/652,497

09/02/2003

Dae-Hwan Kim

1349.1293

3058

21171

7590

06/05/2006

STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/652,497

Applicant(s)

KIM, DAE-HWAN

Examiner

Hai C. Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18 is/are allowed.
- 6) ☒ Claim(s) 1,2,5-10 and 13-16 is/are rejected.
- 7) ☒ Claim(s) 3,4,11,12 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 7-10, 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Terajima et al. (U.S. 6,081,346) in view of Georges et al. (U.S. 6,587,171) (the extra reference in Georges et al. is being cited to prove that the primary reference contains an enabled disclosure, per MPEP 2131.01).

Terajima et al. discloses an image forming apparatus comprising a light source (14) to emit a plurality of beams (the exposure light source 14 having a plurality of light emitting elements or LEDs for emitting beams having the primary colors) (Fig. 1), a micro-polarized array (LCD panel 20) to receive the light beam, comprising a plurality of polarized cells arrayed along a predetermined direction (the LCD panel is defined as having a plurality of liquid crystal cells with corresponding polarized elements), a polarization direction adjuster (LCD driver 22) to adjust transmission directions of each of the polarized cells according to image data (the LCD driver 22 drives each of the liquid crystal cells of the LCD panel so as to control the *polarization direction of the transmission of light through the cell* based on the image data stored in the image storage section 38) (Fig. 5 shows the cells 50B transmitting the light having a

Art Unit: 2861

polarization direction of transmission being different from the that of the incident light beam). Such adjusted transmission direction of the polarized cell is clearly illustrated in Figs. 1a-1b of Georges et al., which teaches the basic concept of the liquid crystal cell in the transmission of light, wherein the incident light beam undergoing a modification of the polarization direction due to the helix while being transmitted through the inactivated cell so as to have a polarization direction perpendicular to that of the incident light beam, and when the cell is activated, the polarization direction of transmission of the light beam remains unchanged (col. 4, line 45 to col. 6, line 15).

Terajima et al. further teaches:

- a light detecting plate (polarizing filter 54) to receive the transmitted light beam from the polarized cells and to selectively transmit polarized elements of the received beams according to respective polarized directions of the polarized elements upon exiting the polarizing cells (the polarizing filter 54 has a specific transmission direction as shown by the vertical lines in its plane in Fig. 5, and transmits therethrough only light beam having the same transmission direction) (again Georges et al. teaches the same configuration wherein the crossed polarizer 18 receives the polarized light beam exiting from the liquid crystal cell and passes only light beam having the same polarization direction, e.g., when the cell is inactivated, while absorbs the exited light beam those polarization direction remains unchanged in the case of the cell being activated) (col. 4, line 45 to col. 6, line 15) (Figs. 1a-1b),

- the polarized cells are arranged in an array (the LCD panel 20 having an array of a large number of liquid crystal cells),
- the light detecting plate (polarizing filter 54), the array of polarized cells (50B), and the polarization direction adjuster (supporting frame 50B being used as an interface between the LCD driver 22 and the cells 50A) are arranged in the same plane and in parallel with respect to the light source (Figs. 1, 5),
- the light detecting plate (polarizing filter 54) transmits the polarized elements of the received beams in a predetermined direction (e.g., polarization direction imposed by the polarizing filter 54) (Fig. 5),
- the light detecting plate (polarizing filter 54) transmits the polarized elements when the respective polarized directions of the polarized elements correspond to the predetermined direction (the polarizing filter 54 has a specific transmission direction as shown by the vertical lines in its plane in Fig. 5, and transmits therethrough only light beam having the same transmission direction) (again Georges et al. teaches the crossed polarizer 18 receives the polarized light beam exiting from the liquid crystal cell and passes only light beam having the same polarization direction, e.g., when the cell is inactivated) (Fig. 1a),
- the light detecting plate (polarizing filter 54) transmits the polarized elements when the respective polarized directions of the polarized elements do not correspond to the predetermined direction (the polarizing filter 54 has a specific transmission direction as shown by the vertical lines in its plane in Fig. 5, and transmits therethrough only light beam having the same transmission direction)

Art Unit: 2861

(again Georges et al. teaches the crossed polarizer 18 receives the polarized light beam exiting from the liquid crystal cell and does not pass the light beam having an unchanged polarization direction when the cell is activated, the unchanged polarization direction being perpendicular to that imposed by the crossed polarizer 18) (Fig. 1b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terajima et al. in view of Georges et al. (U.S. 6,587,171) (the extra reference in Georges et al. is being cited to prove that the primary reference contains an enabled disclosure, per MPEP 2131.01) and in view of Miyagawa (U.S. Pub. No. U.S. 2003/0007068).

Terajima et al., in view of Georges et al., discloses all the basic limitations of the claimed invention (please refer to paragraph 2 above), but except for the photosensitive drum.

Regardless, it is old and well known in the art to use an image carrier such as the photosensitive drum for forming an image by exposure of the light as evidenced by Miyagawa, which discloses a polarization direction controlling system for controlling polarized elements of the light beam in an exposure device, which comprises the

Art Unit: 2861

polarization direction controlling element (34) and a polarization separating element (36) to control the polarization direction of the light beam and prevent the polarization direction to change over time, wherein the polarization direction controlling element allows light beams of certain polarization direction to pass through to expose the photosensitive drum (14).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the photosensitive drum in the device of Terajima et al. since Miyagawa teaches this to be well known in the printing art to use the photosensitive drum for forming a latent image.

5. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terajima et al. [in view of Georges et al., per MPEP 2131.01] and in view of Miyagawa, as applied to claim 1 above, and further in view of Munechika et al. (U.S. 5,515,097).

Terajima et al., as modified by Miyagawa, discloses all the basic limitations of the claimed invention except for the micro lens array located after the light detecting plate.

Munechika et al. discloses an image forming apparatus including an array light emitting elements (31), a linear polarizer (110), an electro-optic modulator (120) formed by an array of polarized cells, a birefringent plate (130), and a gradient index lens array (29) for focusing the polarized light beams onto the image plane (11), all the above-mentioned components being disposed on a same plane and in parallel with each other (Fig. 7).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the array of focusing lenses into the device of Terajima et al. as taught by Munechika et al. The motivation for doing so would have been to miniaturize the optical system since the gradient index lens array is known to shorten an object image distance.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terajima et al. [in view of Georges et al., per MPEP 2131.01] and in view of Miyagawa, as applied to claim 1 above, and further in view of Matsumoto (U.S. 5,877,844).

Terajima et al. in view of Georges et al. and as modified by Miyagawa discloses all the basic limitations of the claimed invention except for the reflective member.

Matsumoto discloses in Fig. 1 an image exposure method and apparatus comprising a light source (14) to emit a light beam, the light source having a reflective member, e.g., light reflector as shown in Fig. 1, to reflect the beams emitted from the light source so that the beams can fall incident on the micro-polarized array (LCD panel 20), which comprises a plurality of polarized cells arrayed along a predetermined direction (the LCD panel is defined as having a plurality of liquid crystal cells with corresponding polarized elements), a polarization direction adjuster (LCD panel driving section 22) to adjust transmission directions of each of the polarized cells according to image data (the driving section 22 drives each of the pixels of the LCD panel so as to control the polarization transmission of each of the pixels based on the image data stored in the storing section 30).

Art Unit: 2861

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the light source with the light reflector as taught by Matsumoto in the device of Terajima et al. The motivation for doing so would have been to allow the light beam emitted from the light source to fall on the entire surface of the LCD panel.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terajima et al. [in view of Georges et al., per MPEP 2131.01] and in view of Fuji et al. (U.S. 6,072,566).

Terajima et al. discloses all the basic limitations of the claimed invention except for the polarized cells being made of poly vinyl alcohol (PVA) doped with iodine.

However, it is well known in the art that the polarized cells of the liquid crystal display are commonly made of PVA doped with iodine as evidenced by Fuji et al. at col. 3, lines 4-14.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the LCD with the polarized cells being made of poly vinyl alcohol (PVA) doped with iodine in the device of Terajima et al. as taught by Fuji et al. since Fuji et al. teaches this to be old and well known in the art to use such material.

Allowable Subject Matter

8. Claim 18 is allowed.

Art Unit: 2861

9. Claims 3-4, 11-12 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments with respect to claims 1-2, 5-10 and 13-16 have been considered but are moot in view of the new grounds of rejection. It is also noted that Terajima et al. disclosure lacks the discussion regarding the function of the polarized cells that forms the liquid crystal display, which adjusts the polarization direction in the transmission of the light beam, and the Georges et al. reference is used to prove such characteristic of the polarized cells.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2861

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR, or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HAI PHAM
PRIMARY EXAMINER

May 26, 2006